

# SEROTONIN

**research**

collecting venom from the toad, *Bufo marinus*

see overleaf



## frontispiece . . .

The venom from the poison gland of a tropical toad (*Bufo marinus*) is used in the study of serotonin, an important body substance associated with hypertension. The venom is used also in the analysis of the biological formation of certain other substances which affect the cardiovascular system.

Although potent, serotonin occurs in small amounts in mammalian tissues, and other animals were investigated as sources. Tropical toads were found to have an excellent supply of the substance. *Bufo marinus* secretes large quantities of a venom rich in serotonin, a digitalis-like substance, and adrenalin in the large neck gland, which can be milked frequently.

The existence of serotonin has been known for only a few years and there is much to be discovered about what it does and how it is made. The parent substance of serotonin is the amino acid tryptophan, which can be converted to serotonin by enzymes in the kidney and liver. Tryptophan is in normal proteins contained in any average diet. Serotonin is present in many body tissues and in the blood stream in billions of floating disks called platelets.

In whatever way it is tested, serotonin is found to be an extremely powerful vasoconstrictor. It can so diminish the blood supply of the kidneys that the flow of urine is practically cut off.

Investigators are now working on how serotonin is made in the body, where it is formed, and how and where it is destroyed. A new amino acid (5-hydroxy-tryptophan) was discovered in this study and found to be the first step in the metabolic conversion of tryptophan. Now investigators will try to isolate the new amino acid in sufficient quantities to purify.

Steps in the conversion of tryptophan, and the new amino acid, were discovered by three scientists with the Laboratory of Chemical Pharmacology, National Heart Institute, National Institutes of Health, Public Health Service.

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